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ABSTRACT

The variables of Scholastic Aptitude Test scores, high school rank, emotional adjustment, motivation for grades, and sex were examined as they relate to the academic success of university seniors. Information from 208 members of the Class of 1988 from a Mid-Atlantic Region liberal arts college was collected through the Opinion, Attitude, and Interest Survey; the Student Questionnaire; and data from the school concerning academic achievement. Multiple regression analyses revealed that the Scholastic Aptitude Test scores accounted for approximately 11% of the variance, while the achiever personality scale of the Opinion, Attitude, and Interest Survey added approximately 3% to the variance. Results of the study did not provide strong evidence to indicate that personality variables are better predictors of college grade point average than cognitive measures among highly successful high school students. Future research needs to focus on other cognitive and affective variables which may correlate with college grade point average. Contains 48 references. (Author/GLR)

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THE RELATIONSHIP OF COGNITIVE AND AFFECTIVE VARIABLES TO
COLLEGE GRADE POINT AVERAGE AMONG HIGHLY SUCCESSFUL HIGH
SCHOOL GRADUATES

by

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A Thesis

Presented to the Faculty of

Bucknell University

in Partial Fulfillment of the Requirements for the Degree of
Master of Science in Education

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ABSTRACT

The intent of this study was to examine the relationship of a number of variables, both cognitive and affective, which were judged to be predictors of college grade point averages for a group of university students. Specifically, the variables of Scholastic Aptitude Test scores, high school rank, emotional adjustment, motivation for grades, and sex were examined as they relate to the academic success of university seniors. The subjects of this experiment were 280 members of the Class of 1988 at a selective, private, liberal arts college in the Middle Atlantic Region of the United States. Prior to their matriculation to the university, all of the subjects graduated from their respective high schools in the highest five percent of their class. A variety of academic majors was represented by the sample. In this group were 102 males and 178 females. The collection of data was accomplished through the administration of the Opinion, Attitude, and Interest Survey to determine achiever personality and emotional adjustment; the Student Questionnaire was used as a measure of motivation for grades and sex; academic information (grade point averages, high school ranks, and Scholastic Aptitude Test scores) was provided by the university. Upon receipt of the data from the university Division of Psychological Services and the Office of the

Registrar, multiple regression analyses were performed. Scholastic Aptitude Test scores accounted for approximately 11% of the variance, while the achiever personality scale of the Opinion, Attitude, and Interest Survey added approximately 3% to the variance. Results of the study did not provide strong evidence to indicate that personality variables are better predictors of college grade point average than cognitive measures among highly successful high school students. Although the grade point averages of senior university students did demonstrate noticeable variability, the constructs examined in this study did not appreciably account for this variance. Therefore, future research needs to focus on other cognitive and affective variables which may correlate with college grade point average.

INTRODUCTION

The prediction of a student's academic performance in college and his eventual academic success are two areas which have received considerable study from members of the higher education and secondary school communities (Hays, 1988; Fiske, 1989). As college admissions officials review student applicant information, they are most concerned about determining whether or not students will perform effectively at a particular institution of higher learning. High school teachers and counselors are constantly helping students to select a college where they will succeed and feel comfortable in their academic pursuits.

Despite the enormous amount of time and energy they invest in college selection and placement, some students, who have the intellectual ability to succeed academically at the college level, do not. In some institutions of higher education which have highly selective admissions requirements, the admissions criteria, such as grade point average, Scholastic Aptitude Test scores, and rank in high school class have not been particularly effective as predictors of students' college grade point average.

Why do some high achieving high school students sometimes perform academically at a much lower level in college than would be predicted from their high school grades?

Since these students have demonstrated their ability to succeed academically in high school, it is unlikely that cognitive factors are contributing appreciably to their academic non-success. This leads one to consider affective variables as possible correlates of high or low levels of achievement among bright students at the college or university level.

The purpose of this study was to examine the relationship of a number of variables, both cognitive and affective, which were judged to be predictors of academic success of a group of university students who graduated in the top five percent of their high school class. Specifically, the variables of Scholastic Aptitude Test scores, high school rank, emotional adjustment, motivation for grades, and sex were examined as they relate to academic success of university seniors.

REVIEW OF THE LITERATURE

In considering variables, both cognitive and affective, which predict academic success, a variety of constructs which have the potential of being good predictors are available. Cognitively, indicators of achievement and aptitude (intelligence) are used frequently at all levels of education regarding predictions of academic performance. In recent years, affective variables related to student personality have received considerably more attention as they relate to a student's future achievement (Hays, 1988). While personality measurements are occasionally administered to school age children, such tests are not typically used as predictors of academic success at the university level. Generally, they are not implemented unless a need arises to do so, e.g., to provide insight for a college psychologist dealing with a particular student.

Two affective variables were selected for use in this particular study--motivation for grades and emotional adjustment. The results of previous research which addresses these variables as they relate to academic success has been reviewed. The review of the literature also includes an analysis of two cognitive variables, high school rank and Scholastic Aptitude Test scores, which have been used frequently to predict academic achievement at the university level.

High School Rank and the Scholastic Aptitude Test

When reviewing applications received from prospective students, the goal of college admissions officials is to select those individuals who will perform well academically at that institution. A variety of assessment procedures are sometimes used, the two most common are high school rank and/or grades, and the Scholastic Aptitude Test.

Krockover, Mortlock, and Johnson (1987) in their study of teacher education versus non-education majors found that a positive correlation exists between high school rank and freshman grade point average. Also in this study, high college senior grade point average was positively correlated with both freshman grade point average and high school rank. No significant relationship was found between scores on the Scholastic Aptitude Test and freshman or senior grade point averages. The researchers conclude that high school rank predicts college grades better than the Scholastic Aptitude Test because it includes a reflection of both ability and motivation. Although ability is measured by the Scholastic Aptitude Test, it leaves the area of motivation unexplained.

Crouse (1986) found the use of the Scholastic Aptitude Test in the admissions process to be redundant. In his statistical comparisons of predicting freshman grade point average from high school rank alone or from high school rank and Scholastic Aptitude Test scores, no significant

differences were found between predicting academic success by either method. Both methods of prediction proved equally effective. Because of the findings, he states "Since the SAT has very little effect on who is in a college's freshman class, the SAT will also have very little effect on any college outcome" (p. 348).

In a study of minority students, Houston (1983) found high school rank to be a better predictor of college academic success than the Scholastic Aptitude Test or the Ammons Quick Test, an aptitude measure. In a later experiment concerning study habits, high school rank, the Scholastic Aptitude Test, and their relationship to achievement, Houston (1987) found high school rank to be a superior means of predicting undergraduate grade point average.

Balkin (1987) examined the relationship between several personality factors and high school rank as they related to the prediction of college grade point average. High school rank was found to correlate most strongly with grade point average, with a minimal relationship occurring between personality factors and achievement.

In an effort to predict college success, Dreher and Singer (1985) examined reading comprehension, high school grade point average, attitude toward school, and the Scholastic Aptitude Test as predictors. Their results, based on a regression analysis, indicated that the best

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predictors of achievement were learning from text, high school grade point average, and attitude toward school. No correlation was found between the Scholastic Aptitude Test and future academic success.

White, Nylin, and Esser (1985) compared the number of academic courses completed and grades earned, the combined verbal and quantitative Scholastic Aptitude Test scores, the high school rank, and the high school grade point average as four variables relative to achievement. The total number of courses taken in high school emerged as the best predictor of college success, followed, in order, by high school rank, high school grade point average, and Scholastic Aptitude Test scores. Caution must be exercised in making generalizations from this research as data was collected at a small commuter-type college. Implications for residential colleges or universities of varying sizes may not be feasible; however, the study does support the importance of the student's high school academic record in predicting academic success.

A variety of studies have been completed attempting to relate cognitive and affective variables to the Scholastic Aptitude Test. Belz and Geary (1984) investigated the notion of sex differences and father's occupation to Scholastic Aptitude Test scores. In support of previous research, boys were found to have higher mean quantitative scores; whereas, no sex differences were found for the

verbal scale. Father-absent boys showed significantly lower mean quantitative scores than father-present boys, but there were no differences between the two groups on the verbal scale. Conversely, father-absent girls had lower mean scores on both scales compared to father-present girls. No hypothesis concerning father's occupation and the Scholastic Aptitude Test scores was supported.

Similar findings in sex differences among Scholastic Aptitude Test scores were found by Benbow and Stanley (1982). Their results also support previous research to indicate that boys scored higher than girls on the mathematics portion of the Scholastic Aptitude Test, and girls scored higher than boys on the verbal section of the Scholastic Aptitude Test. The study concluded that these sex differences in ability areas are found as early as the seventh or eighth grade and persist throughout high school.

Baird (1984) attempted to determine whether or not an interaction existed between college admissions' test scores (the Scholastic Aptitude Test) and family income. Baird could not find a direct relationship between the two variables, as applicants from families of varied wealth obtained college admission. Applicants at every Scholastic Aptitude Test score level obtained college admission, and family income seemed to have only a small influence on the type of college attended. Baird found that students with high Scholastic Aptitude Test scores were more frequently

studying full-time, pursuing bachelor's degrees, and were obtaining higher grades in college than the other groups. Baird indicated in his study that "Some support [exists] for the idea that the SAT may be generally serving the purposes its makers hope it will serve, helping identify talent..." (p. 394). However, his study at no time discussed the relationship between the Scholastic Aptitude Test as a predictor of college academic success.

Contrary to studies finding a substantial difference favoring high school rank to the Scholastic Aptitude Test in predicting academic success, Weitzman (1982) in his study found a predictive validity of .64 for the Scholastic Aptitude Test and .60 for high school rank. He claims that the Scholastic Aptitude Test is indeed a valid test, and that the best means of predicting college success would be for admissions officers to use both the Scholastic Aptitude Test and high school rank when making admissions decisions.

In a second study, Krockover, Mortlock, and Johnson (1987) found that high school rank, Scholastic Aptitude Test total score, and freshman grade point average were all highly correlated as variables of college success. No superiority of any one variable was found in this study.

Motivation for Grades (Achievement Motivation)

A second predictor of academic success for college students which has been researched is motivation for grades.

Achievement motivation or motivation for grades is defined simply as "The emotional need within the student to achieve or act favorably toward schoolwork" (Fenn and Iwanicki, 1986, p. 10).

Motivation for grades and its contribution to academic success has occasionally been examined in the area of higher educational research. In one study by Whitehead (1984), the initial hypothesis that it is indeed possible to identify students' motivation as intrinsic or extrinsic was supported. Generally, girls were proven to be more intrinsically motivated than boys; boys appeared to be more extrinsically motivated. Parental attitude was found to play a part in determining motivational style. Of most importance to this study was the finding that no particular type of motivation was strongly associated with high or low achievement.

Schuman, Walsh, Olson, and Etheridge (1985) supported Whitehead's research in their examination of four different motivation/effort-grade relationships in higher education. Between general study time and grade point average no correlation was found. Likewise, between study time and grades for a specific course, no correlation was found. No correlation was evident when measuring effort unobtrusively, nor was a correlation significant when cumulating measures of effort over time.

DeBoer (1985), in his study of expectations, affect, and persistence for achievement of freshman college students, found that when success was attributed to effort, positive affect within the student was the result. Attribution to failure of a task created negative affect. DeBoer was able to parallel these predictions concerning achievement behavior closely with predictions concerning expectations. Relative to persistence, students' intentions to take another course in the same area were found to be related to either attributing success to both ability and effort or attributing failure to lack of ability; hence, the students seemed motivated only for grades when they had done well. Accordingly, this study implies that for successful students, motivation for grades has a positive effect upon achievement. A limitation of this study is that the measures of motivation for grades were taken "after the fact", and thus give us no clear indication of a relationship between the two variables prior to any report of academic progress or outcome. As DeBoer states in the article, "Affective reactions were primarily a function of the level of performance" (p. 629).

Fenn and Iwanicki (1986) attempted to determine whether the affective variables of locus of control, achievement motivation, and self-concept accounted for differences in a student's achievement. Their findings indicated that all three of these affective characteristics in question did

indeed have a significant effect upon student achievement. The results of the study were based on data collected from students in grades four, five, and six in an urban New England school. While these findings are interesting, the extent to which they may be generalized to college students is open to question.

Eison, Pollio, and Milton (1986) grouped students into four categories regarding high and low learning-orientation and high and low grade-orientation. In only one of the four groups, high learning-orientation, low grade-orientation, was a correlation between motivation for grades and academic success of significance. This study provides only limited evidence that a correlation between motivation for grades and academic success exists for heterogeneous groups of college students.

Emotional Adjustment

The third predictor of academic success which has been investigated is emotional adjustment. The college years, particularly the freshman year, is an emotional transition period for students. Upon leaving the home and high school environments, college students experience significant changes in their academic and social lives. The transition to a college campus can place students under academic and emotional stress as they adjust to their new environment. Emotional adjustment includes the social network, housing

arrangements, personality factors, and family dynamics of the student as he makes the transition to this college lifestyle.

Emotional Adjustment in General

Cuyjet and Rode (1987) performed a research study with college freshmen regarding the impact of orientation programs and their result on emotional adjustment and achievement among these freshmen. Cuyjet and Rode found that after an extensive first semester orientation contact program, these individuals scored higher on an emotional satisfaction inventory than those students who had not been involved in the extensive contact network. However, at the end of the first semester, no significant correlation was found between those individuals who scored high on the emotional satisfaction inventory and first semester grade point average. A correlation was found to exist among high school rank, American College Test scores, and scores on the emotional satisfaction inventory. While it is possible that no relationship exists between emotional satisfaction and academic success, it is also possible that grades reported for only one semester were not adequate in drawing such a negative conclusion. The Cuyjet and Rode study also proved a significant difference in emotional satisfaction favoring females over males and a high emotional satisfaction among on-campus residents as opposed to off-campus students.

A study completed by Schrager (1986) examined the relationship among living groups, social climate and student academic performance, in order to gain insight into how freshman grades are affected by their social environment. Schrager found that in Greek units (fraternities) freshman achievement was facilitated by emphasis on academic achievement and competition. The Greek units were characterized by high involvement, emotional support, and low independence. The fraternities also scored high on order and organization and student influence. In contrast, residence hall subjects found a negative relationship of achievement to traditional social orientation to exist, indicating that achievement is inhibited by groups that emphasize the importance of such traditional social activities. (In the Greek units, traditional social orientation was correlated with achievement.) Schrager cautions readers that the reasons Greek units, based on this study, may seem like a better environment to further academic success could be due to selection factors. Students who become members of Greek units are aware of the scholastic record of potential living groups and attempt to find a group which "fits" their personal and academic desires. It could be that, "If students select fraternities that they perceive to fit their own scholastic aspirations, these correlations between social climate measures and group achievement measures may be nothing more than documentation

that selection factors are indeed operating" (p. 275). In sum, the findings of this study do support the belief that living groups do have an effect upon the academic performance of college students.

A contrasting study by Nowack and Hanson (1985) attempted to clarify differences in academic achievement between residence hall and non-residence hall students. Their hypothesis predicted that freshman students living in residence halls would have higher grade point averages and experience less academic difficulty than their non-residence hall counterparts. Their findings supported this hypothesis. Also supported was a hypothesis that off-campus females would experience greater academic success than off-campus males.

Individual personality factors and their relationship to emotional adjustment and academic success were explored by Traub (1983). He examined the relationship of shyness among college students to depression, anxiety, and academic performance. His study revealed that shy people tend to be more depressed and anxious than non-shy people. Further, shy people had better grade point averages than their non-shy counterparts. Traub attributes this to the idea that shy college students avoid social interaction by devoting more time to studying. However, neither shy peoples' efforts for grades, nor shy peoples' emotional adjustment to the college environment was addressed.

Lee (1984), in an attempt to investigate a number of psychosocial variables and their relationships to academic success for rural black adolescents, developed a profile of psychosocial variables relative to academic success among black students. He found that students who were academically successful, based on achievement test scores, came from close and supportive families with strong educational and social directions from parents. These students had positive educational experiences and had social networks outside their families, as well as strong identification with positive models. While a relationship between positive and supportive family dynamics to achievement is implied in this study, the project has several problems which create serious doubts regarding its credibility. A sample of only 68 all black junior and senior high school children in a rural county in the southeastern United States creates a situation whereby implications for college students at a university may be somewhat limited.

Related to the emotional aspects of family dynamics and academic achievement is research by Teyber (1983) who examined the relationship between cross-generational primary alliances and the late adolescent's ability to emancipate from the family as predictors of academic success achieved as a college freshman. Teyber states that "Primary cross-generational alliances will interfere with normative

developmental tasks of separation" (p. 306). His hypothesis that, "Late adolescents who describe their parents' marital relationship as the primary dyadic alliance in the family will be more likely to succeed academically as college freshmen than those reporting a non-marital dyad as primary" (p. 307) was supported. These findings suggest that when the family's primary emotional alliance is between parent and child, rather than mother and father, sons or daughters will have more difficulty negotiating the task of emancipation from the family and thus stand a better chance of academic failure than students from families whose primary emotional alliance is between mother and father.

In a final study regarding general emotional adjustment and academic success, Ray (1983) attempted to determine whether or not relationships existed between home adjustment, health adjustment, social adjustment, emotional adjustment, and females' academic achievement. No correlation was found between academic success and any of the variables.

In addition to reviewing in general the affective variable of emotional adjustment, the investigator has viewed two primary constructs as vital to the notion of the emotional adjustment of college students--self-concept and anxiety. It is believed that these two areas are important

components when considering one's ability to adapt to college. Hence, the constructs of self-concept and anxiety are included within this section of the literature review.

Self-Concept as a Component of Emotional Adjustment

Baumeister and Tice (1985) define self-concept or self-esteem as "A global evaluation of the self, as typically measured by the degree to which the person endorses various evaluative statements about the self" (pp. 450-451). Prola and Stern (1984) attempted to assess the role of positive self-concept on academic performance in college. They predicted that more able college students would tend to feel better about themselves and their accomplishments; however, an insignificant correlation between positive self-concept and college grade point average was found.

Pascarella (1985), using both individual subjects and institutions, was able to support his general hypothesis that the structural/organizational characteristics of colleges have had few direct impacts on affective student development. He attempted to look at which variables relative to student background and pre-enrollment characteristics correlated with academic success and self-confidence. Self-concept and its relationship to grade point average at the end of the sophomore year was barely

significant. At all other levels that self-concept and academic success was measured, no significant relationship was found.

Although not dealing directly with self-concept and academic success, Pascarella (1985) in another study investigated the impact of on-campus living with two measures of student self-concept. The study took into account residential status; institutional, structural and organizational characteristics; and measures of students' levels of academic and social integration. The results indicated no significant, direct influence between residential status and either intellectual or interpersonal self-concept of the students. Living on campus was found by Pascarella to have an effect on students' interactions with peers and family, an area which he had found did have a direct effect on student self-esteem. No direct relationship between residential status and self-esteem was proven.

In a poorly administered study, Mizuta (1985) attempted to prove a hypothesis whereby he claimed that "Subjects who obtained high achievement scores would have a larger discrepancy between ideal self and real self than those who obtained low achievement scores" (p. 83). Despite a sampling of 600 college students he was unable to support his hypothesis as stated.

A study which produced mixed results concerning the relationship between self-concept and academic success is one completed by Spaight, Kenner, and Dixon (1986). In their experiment using all black students as subjects, three hypotheses were proposed. The first suggested that a significant relationship between self-concept and grade point average would not be found among the male subjects involved in the study. This hypothesis was supported. The second hypothesis made the same prediction for the female students. This hypothesis was rejected as a significant correlation was discovered between females' self-esteem and grade point average. The final hypothesis proposed that for the total sample, a correlation would not be found between self-concept and grade point average. This hypothesis was supported.

Several studies have indicated that a relationship does exist between self-concept and academic success. Gadzella and Williamson (1984) demonstrated in their study that there were significant, positive correlations between self-concept, study skills, and academic achievement; and between study skills and self-concept. Although this study found self-concept to be interrelated with both study skills and academic achievement, it did not find a direct correlation between self-concept and academic success. Only the study skills test used in the experiment was found to be an effective predictor of grade point average.

Robinson and Cooper (1984) found a positive correlation between self-concept in regard to ability and academic success for university students enrolled in a technologically oriented curriculum. Moreover, a strong relationship between past academic performance and self-concept was demonstrated. The sample in the study consisted of college engineering or technology students who were all in the top ten percent of their high school graduating class. The results of this study provide valuable support for the hypothesis that positive self-concept is related to academic success when considering homogeneous groups of bright students.

Tracey and Sedlacek (1985) examined the predictive validity of an instrument they developed, the Non-Cognitive Questionnaire for black and white college students at various points over four years. They attempted to find a relationship between the Non-Cognitive Questionnaire and academic success. Although no strong predictions could be made for whites regarding academic achievement and any aspect of the Non-Cognitive Questionnaire, black students were found to have a significant relationship between positive self-concept and academic success and realistic self-appraisal and academic success.

Griffin (1980) attempted to determine which of several personality and biographical variables correlated significantly with grade point average and academic success.

Griffin proved a relationship to exist between students who have a poor self-image and poor academic self-concept and low student academic achievement. He makes no statement about any relationship, either significant or nonsignificant, between positive self-concept and academic success. Although the study was based upon a sampling of students from community colleges and technical institutes, it indicates that a relationship exists between poor self-esteem and low academic achievement.

Baumeister and Tice (1985) proposed a model in which "The goal of people with high self-esteem is to cultivate personal strengths in order to excel; whereas, the goal of people with low self-esteem is to remedy personal deficiencies in order to become adequate" (p. 464). Their study provides additional support for the hypothesis that self-esteem is related to academic achievement.

Griffore and Griffore (1982) attempted to describe the nature and extent of changes in selected personality variables among high and low achieving college students. After comparing first semester freshman grade point averages with the pre-test scores of the personality inventory (taken by the students before admission to the college), only self-concept proved to be a significant factor between high and low achievement. However, post-test scores of the personality inventory taken after the students had received their first semester grades indicated a significant

correlation between achievement and, not only self-concept, but also academic futility and facilitating anxiety. Specifically, at post-test, the lower group was distinguishable from the upper group in terms of lower self-concept, greater sense of academic futility, and lower facilitating anxiety. Griffore and Griffore believe that during the first semester of college doing well has little effect on the personality variables studied, but doing poorly has a definite effect on some of the variables studied.

Cantor, Norem, Niedenthal, Langston, and Brower (1987) studied the relationship of self-concept to achievement tasks. A significant correlation was found between those students who possessed a positive self-concept and their grade point averages. Although the thrust of the study was intended to evaluate effective strategies which result in achievement, the results also support the hypothesis that positive self-concept is related to academic success.

Anxiety as a Component of Emotional Adjustment

Generally speaking, anxiety is considered to be a state of uneasiness and/or distress about future activities or events. DeMeuse (1985) investigated the relationship between stressful life events (personal injury or illness, death of a close friend) and student performance in the college classroom. Measures of anxiety relative to

stressful life events were taken at both the beginning and conclusion of an academic semester. As hypothesized, the data demonstrated a negative relationship between stressful life events and academic performance.

Barnes, Potter, and Fiedler (1983), in a study of cadets at the United States Coast Guard Academy, suggested that the correlations between grade point averages and the Scholastic Aptitude Test results of cadets who reported high interpersonal stress or anxiety would be lower than those cadets reporting low interpersonal stress or anxiety. Specifically, two hypotheses were examined. The first stated that the correlations between Scholastic Aptitude Test scores and grade point averages would be significantly lower when cadets reported anxiety in their relations with peers and company officers than when these relations were relatively stress-free. The study supported this hypothesis. The second hypothesis suggested that stressful situations with parents and academic instructors would result in a decrease of academic performance. This hypothesis was not supported, as anxiety in this instance did not correlate with academic accomplishments. The researchers suggest that, in a military academy setting, the anxiety created by fellow cadets and superior officers is much more stressful and demanding than pressure created by parents and/or institutions. Therefore, a direct effect between anxiety with peers and company officers and poor

academic performance was found. Had the study occurred in a civilian college or university, the results may have been quite different.

Srivastava and Saxena (1979) attempted to correlate relationships between personality characteristics and self-rated academic success. A translation edition of the Sixteen Personality-Factor Questionnaire was used to measure personality, and subjects were asked to rate their own academic performance as high or low. Their results indicated that academic success was associated with low anxiety and extraversion, while lack of academic success was associated with high anxiety and introversion. While Srivastava and Saxena claim that their research parallels that of an American study (Lavin, 1967; cited in Srivastava and Saxena, 1979), one must be cautioned that this experiment was conducted with a group of Indian college students.

Neibuhr and Norris (1982) investigated the relationship between individual characteristics and performance under different situational environments. Their results indicated a significant interaction between the skills and motivation of an individual and the situational characteristics he faces when trying to perform a task. Neibuhr and Norris found that grade point average was a strong predictor of performance on a task that was not too stressful. As conditions relative to the task became complex, a

motivational variable, need for achievement, emerged as a better predictor of performance. While the study was primarily concerned with the role of need for achievement in academic performance, it does parallel the hypothesis that low anxiety facilitates academic achievement; whereas, high anxiety does not emerge as a predictor of academic success.

Barney, Fredericks, Fredericks, and Robinson (1986) suggested that students with higher academic achievement had significantly lower stress-anxiety responses than students with lower academic achievement. The study, using a small sample of only thirty freshman and sophomore business students, found no relationship between academic achievement and stress-anxiety responses during either semester of the freshman year, nor during the second semester of the sophomore year. During the first semester of the sophomore year, significant relationships between academic achievement and stress anxiety were found among the upper and lower levels of achievement. Results regarding degree of stress anxiety (high or low) are not given in this study. Based on a sample of only thirty students, all of them business majors, one may question the confidence of the results.

Plante (1982) was the only article discovered by the writer which found a significant, positive relationship between grade point average and anxious students. Plante surveyed a total of 59 subjects (41 females, 18 males) for anxiety by using the Activity Vector Analysis (AVA). While

the Activity Vector Analysis is a well-documented measure for assessing self-concept, it seems unclear why Plante chose that measure to examine anxiety. Plante implies that students who cluster around the Activity Vector Analysis profile, PS 5519 are likely to have a "worrier" personality, and be "dominated by fearfulness". He states that previous research proves that students who cluster around PS 5519 are "More likely to maintain higher academic grades" (p. 1118). His results indicate that college students at a competitive university tend to maintain higher grade point averages when they exhibit anxiety.

In attempting to determine events which elicit academic stress and anxiety, Kohn and Frazer (1986) found that students are most stressfully affected by activities basic to their role as students. Final grades, term papers, examinations, and excessive homework were found to be the greatest causes of anxiety among college students involved in this research study. The relationship of these stressors to academic achievement was not discussed.

Eison (1982) attempted to draw conclusions regarding personality characteristics of students and their orientation to either learning or grades. Among learning-oriented students, he found them to experience low anxiety as opposed to no correlation between anxiety and grade-oriented students. Academic achievement was not a variable in the study to which anxiety was compared.

In summary, an analysis of prior research suggests the following:

1. High school rank is significantly related to college grade point average.
(Krockover, Mortlock, and Johnson, 1987; Houston, 1987; Balkin, 1987; Dreher and Singer, 1985; White, Nylin, and Esser, 1985)
2. High school rank is as good or better a predictor of college achievement than the Scholastic Aptitude Test.
(Krockover, Mortlock, and Johnson, 1987; Crouse, 1986; Houston, 1983)
3. A correlation exists between Scholastic Aptitude Test scores and college grade point average. (White, Nylin, and Esser, 1985; Weitzman, 1982; Krockover, Montlock, and Johnson, 1987)
4. Differences in scores between the sections of the Scholastic Aptitude Test have been successfully attributed to sex. Patterns of achievement on the Scholastic Aptitude Test for boys and girls have been proven.
(Belz and Geary, 1984; Benbow and Stanley, 1982)

5. For general, heterogeneous populations, motivation for grades does not have a direct effect upon either high or low achievement.
(Whitehead, 1984; Schuman, Walsh, Olson, and Etheridge, 1985)
6. Minimally significant relationships do exist between motivation for grades, affective personality characteristics, and academic achievement.
(DeBoer, 1985; Fenn and Iwanicki, 1986; Eison, Pollio, and Milton, 1986)
7. No significant correlation exists between general emotional adjustment to college and grade point average when considering college students as a whole.
(Cuyjet and Rode, 1987; Ray, 1983)
8. Aspects of general emotional adjustment, such as student personality, living group organization, and family dynamics, do indirectly effect the academic performance of college students.
(Schrager, 1986; Nowack and Hanson, 1985; Traub, 1983; Lee, 1984; Teyber, 1983)

9. For general, heterogeneous populations, no significant, direct relationship exists between self-concept and academic success. (Prola and Stern, 1984; Pascarella, 1985)
10. Self-concept has been demonstrated to correlate with study skills and academic achievement when examined in combination with both of these variables.
(Gadzella and Williamson, 1984)
11. Self-concept has been demonstrated to be related to academic achievement when combined with various affective and personality variables.
(Baumeister and Tice, 1985; Griffore and Griffore, 1982; Cantor, Norem, Niedenthal, Langston, and Brower, 1987)
12. It has been demonstrated in several studies that self-concept is related to academic performance among homogeneous groups such as--black women (Spaights, Kenner and Dixon, 1986); technologically-oriented students (Robinson and Cooper, 1984); black minority students in general (Tracey and Sedlacek, 1985); and community college and technical school students (Griffin, 1980). No study was examined in this review

which indicated a significant relationship between self-concept and academic success for heterogeneous groups of college students.

13. For general, heterogeneous populations, a negative relationship exists between anxiety and academic success. (DeMeuse, 1985; Barnes, Potter, and Fiedler, 1983; Srivastava and Saxena, 1979; Niebuhr and Norris, 1982)
14. A variety of causes of anxiety among college students and personality styles relative to anxiety and achievement have been studied. (Kohn and Frazer, 1986; Eison, 1982).

Based on this review, a large number of studies have attempted to demonstrate significant correlations between cognitive variables, such as high school rank and the Scholastic Aptitude Test, and affective variables, such as motivation for grades and emotional adjustment, as related to academic achievement of college students in general. However, no studies were found which examined those factors which might explain why highly successful high school graduates differ markedly in their levels of achievement at the college/university level.

Therefore, the purpose of this study was to examine the relationship of a number of variables, both cognitive and affective, which were judged to be predictors of academic success of a group of university seniors who graduated in the top five percent of their high school class.

HYPOTHESES AND RATIONALE

The present study was designed to test the following hypotheses:

1. Neither high school rank, nor the individual, nor the combined Scholastic Aptitude Test scores of high achieving high school students will predict college grade point averages of high achieving high school students.

Previous research indicates that high school rank does successfully predict college grade point average (Krockover, Mortlock, and Johnson, 1987; Houston, 1987; Balkin, 1987). While not all research supports a correlation between the Scholastic Aptitude Test and college grade point average, the studies of White, Nylin, and Esser (1985) and Weitzman (1982) do support this relationship. In all of the studies reviewed, results were based on a representative sampling of university students as a whole. While attempting to predict the college grade point averages of highly successful high school graduates, one would not expect to find neither high school rank nor the Scholastic

Aptitude Test as a predictor of academic success because of the homogeneity of this population. (Kerlinger, 1986, p. 120).

2. Motivation for grades (academic motivation) among highly successful high school students will have a significant relationship with college grade point average.

DeBoer (1985) found that, for successful students, motivation for grades had a positive effect upon their achievement. This finding provides direct support for the above stated hypothesis.

3. A significant correlation will be found between emotional adjustment and college grade point average among highly successful high school students.

Since two of the major components of emotional adjustment are judged to be self-concept and anxiety, this hypothesis attempts to replicate the findings of Robinson and Cooper (1984) and Griffin (1980) regarding self-concept and Plante (1982) regarding anxiety.

In considering the self-esteem aspects of emotional adjustment, Robinson and Cooper (1984) proved a direct

relationship exists between self-concept and academic success among college engineering and technology students who had graduated in the top ten percent of their high school class. Conversely, Griffin (1980) found that among students attending community colleges and technical institutes, those who do poorly in school were likely to have a poor self-image and poor academic self-concept.

In regard to anxiety, Plante (1982) discovered that among upper level psychology students, "College students who are anxious tend to maintain higher grades in a competitive university setting" (p. 1118).

4. Sex of the subject will not correlate with college grade point average of students who were highly successful in their high school program.

In most of the studies reviewed (e.g. - Benhow and Stanley, 1982; Whitehead, 1984), differences in sex were not found to be related to academic achievement.

5. The combination of motivation for grades and emotional adjustment among highly successful high school students will have a significant relationship with college grade point average.

As previously hypothesized, it is expected that motivation for grades and emotional adjustment will each account for different amounts of variance as per their individual relationships to college academic success. Because one is led to believe that the intercorrelation between motivation for grades and emotional adjustment is relatively low, the combination of both of these affective variables should account for an even greater amount of variance in regards to college grade point average.

6. Among high achieving high school graduates, no significant correlation will exist between the combination(s) of either Scholastic Aptitude Test scores, high school rank, or sex and college grade point average.

Previous hypotheses have predicted that no significant relationship will occur when considering each of the variables of Scholastic Aptitude Test scores, high school rank, and sex to college academic success; therefore, when considering the combination of any or all of these variables, this hypothesis has likewise been stated in the null form.

METHOD

Subjects

The subjects of this experiment were 280 members of the Class of 1988 at a selective, private, liberal arts college in the Middle Atlantic Region of the United States. Prior to their matriculation to the university, all of the subjects graduated from their respective high schools in the highest five percent of their class. A variety of academic majors was represented by the sample. In this group were 102 males and 178 females.

Materials

The collection of data for this experiment was accomplished through the use of a standardized testing measure, a student questionnaire, and academic information (grade point averages, high school ranks, and Scholastic Aptitude Test scores) received from the university. Information was collected from these sources in an effort to determine what effect cognitive and personality variables might have on college academic success among high achieving high school students. The materials used, with their descriptions, are:

Scholastic Aptitude Test Scores, High School Rank, and College Grade Point Average

Scholastic Aptitude Test scores, high school ranks, and college grade point averages were provided to the investigator by the Office of the Registrar at the university. Scholastic Aptitude Test scores reported were the highest available in each of the two categories (verbal and mathematics) and were not necessarily the highest combined score received by a particular student. Scholastic Aptitude Test scores were reported through the Educational Testing Service, Princeton, New Jersey, as part of students' admission process.

High school rank was determined by the inclusion of graduates who had been in the top five percent of their high school class, as reported by the students' high school or secondary school. Grade point averages of all subjects was provided upon completion of the first semester of the subjects' senior year, their seventh academic semester as students at the university.

Sex, Motivation for Grades

Data regarding sex and motivation for grades was reported by the subjects on the Student Questionnaire. The Student Questionnaire was chosen as a measure because of its judged ability to make accurate predictions with regards to sex and motivation for grades. The questionnaire served as

a means of indicating the variables of sex and the degree of motivation for grades in relationship to the sample used in this experiment.

The Student Questionnaire is a 200-item test which was administered to the university freshmen prior to their first academic year. The questionnaire is divided into four sections--Educational and Vocational Plans, Secondary School Information, Family Background, and Attitudes. The format of the Student Questionnaire is basically multiple choice, allowing students to select the response which best describes their feeling or reaction to the questions.

Information regarding sex was simply provided by the student answering either "male" or "female" to the appropriate question. Motivation for grades was determined by the results of seven questions on the Student Questionnaire intended to measure that construct.

Emotional Adjustment and Achiever Personality

Data concerning emotional adjustment and achiever personality (academic motivation) of the subjects in this study were determined by the subjects' scores on the Opinion, Attitude, and Interest Survey (OAIS). The Opinion, Attitude, and Interest Survey was an administered, standardized test intended to measure the affective variables considered in this study.

The OAIS is a survey intended for use with only college-bound high school students currently in the twelfth grade or for entering college freshmen. The OAIS is not recommended for high school eleventh graders or younger students, since the test was standardized based on data collected from subjects between their graduation from high school and matriculation to college. The OAIS contains 396 statements of opinion, attitude, and interest to which the student responds "true" or "false". Groups of statements or items dispensed throughout the inventory form a total of fourteen scales, and students are given a total score for each scale. Of the fourteen scales, three supply information on how students behaved on the test, and eleven supply information on the personality and interest characteristics of students.

The Achiever Personality Scale of the OAIS measures personality attributes associated with school grades as a predictor of academic success. The OAIS test manual indicates that "Students who score high on the Achiever Personality Scale tend to realize their potential ability and/or achieve higher grade point averages in college" (p. 3).

The Emotional Adjustment Scale of the OAIS measures personality attributes associated with feelings of security, personal worth, optimism, and calmness. Students who score low on this particular scale tend to be "anxious,

hypersensitive, nervous, and in need of personal-emotional counseling" (p. 4). The scale primarily predicts emotional adjustment ratings made by counseling psychologists, and is not correlated with ratings made by peers or significant others.

Procedure

Personality data regarding the subjects in the study were collected during the subjects' orientation activities as incoming university freshmen previous to the start of any of their college classes. Assessments such as the Student Questionnaire and the Opinion, Attitude, and Interest Survey were administered by the Division of Psychological Services at the university. Academic information was provided by the Office of the Registrar. Upon receipt of data from the university Division of Psychological Services and the Office of the Registrar, four major areas were investigated through the use of regression analyses. Predictor variables for the study included Scholastic Aptitude Test scores, High School Rank, Sex, Motivation for Grades, Emotional Adjustment, and Achiever Personality. The dependent variable of the experiment was college grade point average during the senior year. The first area to be examined was the use of the verbal score only of the Scholastic Aptitude Test, along with the other predictor variables to determine significance with college grade point average. A stepwise regression

analysis was performed on this data. Secondly, only the mathematics score (quantitative) on the Scholastic Aptitude Test along with the other predictor variables were examined in a stepwise regression analysis. The third area investigated was the use of the verbal score and the mathematics score (quantitative) of the Scholastic Aptitude Test, each separately (not a total SAT score), along with the other predictor variables. A stepwise regression analysis was again performed on this data. The fourth set of data examined was the use of total Scholastic Aptitude Test scores along with the other predictor variables in a stepwise regression analysis.

RESULTS

All the regression analyses involved the predictor variables of the Achiever Personality Scale, the Emotional Adjustment Scale, the Motivation for Grades Scale, Sex, and High School Rank. Analyses differed in that the first stepwise regression included only the Verbal Scholastic Aptitude Test (VSAT). The second analysis used only the mathematics portion of the Scholastic Aptitude Test (MSAT). The third stepwise regression utilized both the verbal and mathematics Scholastic Aptitude Test scores as separate predictor variables. The final analysis included the combined scores of the Scholastic Aptitude Test.

The subject mortality rate was 26.8%, leaving 205 of the original 280 subjects. Subjects were dropped due to incomplete data received for those 75 subjects. The intercorrelations, means, and standard deviations for the independent and dependent variables are shown in Table 1.

Mathematics Scholastic Aptitude Test scores were significantly correlated with verbal Scholastic Aptitude Test scores ($r = .4134$, $p < .0001$). The Achiever Personality Scale was found to correlate significantly with the verbal Scholastic Aptitude Test score ($r = .1122$, $p < .05$). Also, the Motivation for Grades Scale was correlated significantly with the Achiever Personality Scale ($r = .2412$, $p < .0001$).

Table 1
Means, standard deviations, and correlations for all variables

Variables	1	2	3	4	5	6	7	8	9
1. Verbal SAT scores	--								
2. Math SAT scores	.4134 ¹	--							
3. Combined SAT scores	--	--	--						
4. High School Rank	-.0689	.0149	-.0332	--					
5. Achiever Personality Scale	.1122 ³	.0614	.1036 ³	.0112	--				
6. Emotional Adjustment Scale	.0194	.0672	.0507	.0663	-.0777	--			
7. Motivation for Grades Scale	-.0287	-.0087	-.0226	-.0246	.2412 ¹	.0332	--		
8. Sex	.0093	-.2006 ³	-.1091	-.0442	.0909	-.0358	.1245 ³	--	
9. College Grade Point Average	.2644 ¹	.2546 ¹	-.3077 ¹	.0015	.1973 ²	-.0775	.0688	.0541	--
Mean	561.393	646.036	1207.429	36.050	44.856	54.500	29.924	1.6	31.768
SD	74.004	71.042	121.943	88.445	6.322	9.613	5.113	.501	4.162

¹p < .0001

²p < .001

³p < .05

The predictor variable--sex, was significantly correlated with the mathematics Scholastic Aptitude Test score ($r = -.2006$, $p < .005$) and the Motivation for Grades Scale ($r = .1245$, $p < .05$).

The dependent variable, college grade point average, was significantly correlated with the verbal Scholastic Aptitude Test score ($r = .2644$, $p < .0001$), the mathematics Scholastic Aptitude Test score ($r = .2456$, $p < .0001$), and the combined Scholastic Aptitude Test score ($r = .3077$, $p < .0001$). Moreover, a significant correlation between college grade point average and the Achiever Personality Scale is reported ($r = .1973$, $p < .001$).

Stepwise multiple regressions were conducted to examine the relationship between the predictor variables and college grade point average. The first stepwise regression included only the verbal score of the Scholastic Aptitude Test, along with the Achiever Personality Scale, the Emotional Adjustment Scale, the Motivation for Grades Scale, Sex, and High School Rank. Results (located in Table 2) indicate that the verbal Scholastic Aptitude Test score accounted for approximately 9.5% of the variance $F(1,205) = 21.612$; $p < .0001$ while the Achiever Personality Scale added approximately 3% to the variance $F(2,204) = 14.268$; $p < .01$.

Table 2
Regression summaries for predictors with SAT

College GPA	R	R ²	F	Sig.F	Beta Weight	R ²	Sig.F Change (p)
VSAT	.3088	.0954	21.612	.000	.3088	.09537	.0000
APS	.3503	.1227	14.268	.000	.1661	.02734	.0124

Table 3 presents the results of a stepwise regression analysis performed to examine the effect upon college grade point average of only the mathematics score of the Scholastic Aptitude Test along with the Achiever Personality Scale, the Emotional Adjustment Scale, the Motivation for Grades Scale, Sex, and High School Rank. Mathematics scores on the Scholastic Aptitude Test were found to account for approximately 6.5% of the variance $F(1,205) = 14.308$; $p < .0001$, while the Achiever Personality Scale added approximately 3.3% to the variance $F(2,204) = 11.211$; $p < .01$.

Table 3
Regression summaries for predictors with MSAT

College GPA	R	R ²	F	Sig.F	Beta Weight	R ²	Sig.F Change (p)
MSAT	.2554	.0652	14.308	.000	.2554	.06524	.0002
APS	-.3147	.0990	11.211	.000	.1839	.03379	.0062

The results of a stepwise regression analysis of college grade point average to the predictor variables of verbal Scholastic Aptitude Test scores, mathematics Scholastic Aptitude Test scores, the Achiever Personality

Scale, the Emotional Adjustment Scale, the Motivation for Grades Scale, Sex, and High School Rank are found in Table 4. The scores on the verbal portion of the Scholastic Aptitude Test were found to account for approximately 9.5% of the variance $F(1,205) = 21.612$; $p < .0001$. The Achiever Personality Scale was found to add approximately 3% to the total variance $F(2,204) = 14.268$; $p < .01$. The scores of the mathematics portion of the Scholastic Aptitude Test added approximately 2% to the variance of this particular regression analysis $F(3,203) = 11.119$; $p < .05$.

Table 4
Regression summaries for predictors with VSAT and MSAT

College GPA	R	R ²	F	Sig.F	Beta Weight	R ² Change	Sig.F Change(p)
VSAT	.3088	.0954	21.612	.000	.3088	.09537	.000
APS	.3503	.1227	14.268	.000	.1661	.02734	.0124
MSAT	.3757	.1411	11.119	.000	.1505	.01842	.0382

Table 5 presents the results of a stepwise regression analysis of college grade point average upon the combined Scholastic Aptitude Test scores, the Achiever Personality Scale, the Emotional Adjustment Scale, the Motivation for Grades Scale, Sex, and High School Rank. The combined scores of the Scholastic Aptitude Test accounted for

approximately 11% of the variance $F(1,205) = 25.832$; $p < .0001$, while the Achiever Personality Scale added approximately 3% to the variance $F(2,204) = 16.604$; $p < .01$.

Table 5
Regression summaries for predictors with combined SAT

College GPA	R	R ²	F	Sig.F	Beta Weight	R ² Change	Sig.F Change(p)
CSAT	.3345	.1119	25.832	.000	.3345	.11191	.0000
APS	.3742	.1400	16.605	.000	.1681	.02810	.0105

DISCUSSION

It was hypothesized in this study that, due to the intentionally constructed homogeneity of the sample, neither high school rank nor the individual, nor the combined Scholastic Aptitude Test scores of high achieving high school students would predict college grade point average. This hypothesis was partially supported by the results of this study. It was found that high school rank did not correlate with academic achievement. As demonstrated by the results of this study, the homogeneity of high school ranks among students who graduated in the top five percent of their class created a situation whereby college grade point average could not be predicted from the high school rank. However, the data of this study did demonstrate a significant relationship between verbal Scholastic Aptitude Test scores, mathematics Scholastic Aptitude Test Scores, and combined Scholastic Aptitude Test scores with college academic success. Why did the Scholastic Aptitude Test variable predict academic performance when the high school rank did not? One explanation may be that the homogeneity of high school ranks was much greater for the students in this sample than the homogeneity of Scholastic Aptitude Test scores. This study, because of its structure, directly reduced the number of high school ranks through the selection of students who had graduated in the top five

percent of their high school class. The design structurally did not directly reduce the range of Scholastic Aptitude Test scores (i.e. - those reporting a combined score of 1300 or above). The range of Scholastic Aptitude Test scores, even when considering the top five percent of high school graduates, is most evident by noting that the standard deviation of combined Scholastic Aptitude Test scores proved to be 121 points. The findings of this study tend to be consistent with the research of White, Nylin, and Esser (1985) and Weitzman (1982), in that a correlation does exist between the Scholastic Aptitude Test and college grade point average.

The second hypothesis predicted that motivation for grades among highly successful high school students would have a significant relationship with college grade point average. This hypothesis was also partially supported. Two measures of motivation for grades were used in this study-- the motivation for grades component of the Student Questionnaire and the achiever personality scale of the Opinion, Attitude, and Interest Survey. The results of the study showed a significant relationship between the achiever personality scale of the Opinion, Attitude, and Interest Survey, and college grade point average. This correlation did provide support for the hypothesis. Consistent with the findings of Whitehead (1984) and Schuman, Walsh, and Etheridge (1985), no relationship was found between the

motivation for grades scale and college grade point average. An explanation for the failure of the data from the Student Questionnaire to predict college grade point average may be that the Student Questionnaire is intended for a certain population of college students, specifically, students attending a selective, private, liberal arts college. Further and more importantly, because the measure has not been standardized it may have been an invalid measure of motivation for grades. Conversely, the Opinion, Attitude, and Interest Survey has been demonstrated to be both reasonably reliable and valid and is a standardized measure for students in the twelfth grade of high school or the freshman year of college. It is reasonable to conclude that a correlation exists between the achiever personality scale of the OAIS and college grade point average, thereby providing a reasonable basis for accepting this hypothesis. This finding is consistent with the conclusions of DeBoer (1985).

The third hypothesis concerned the prediction that a significant correlation would be found between emotional adjustment and college grade point average among highly successful high school students. The data did not support this hypothesis. This hypothesis was based on previous research relative to homogeneous groupings of students in regard to self-concept (Robinson and Cooper, 1984; Griffin, 1980) and anxiety (Plante, 1982). Both self-concept and

anxiety were felt to be the two primary components of college emotional adjustment and, likewise, were two of the components included for measurement in the emotional adjustment scale of the Opinion, Attitude, and Interest Survey. After considering the results of this study, one would question whether or not the emotional adjustment scale was indeed a discriminating measure of self-concept and anxiety. The research studies of Cvyjet and Rode (1987) and Ray (1983), who found no relationship between emotional adjustment and college academic success, provide support for this explanation that self-esteem and anxiety are not necessarily significant components of emotional adjustment.

Consistent with the review of the literature, this study supported the hypothesis that sex of the subject would not correlate with college grade point average. In most of the studies reviewed (Benbow and Stanley, 1982; Whitehead, 1984), differences in sex were not found to be related to academic achievement.

The fifth hypothesis of this study suggested that the combination of motivation for grades and emotional adjustment among highly successful high school students would display a significant relationship with college grade point average. This hypothesis was not supported. Again, one would question the instrument of the study in regard to the results. The use of a non-standardized questionnaire as one of the measures of motivation for grades, combined with

an assumption regarding the major constructs of emotional adjustment (i.e. - primarily self-concept and anxiety) could explain why a combination of these two affective variables did not prove significant.

The sixth hypothesis predicted that, among high achieving high school graduates, no significant correlation would exist between the combination(s) of either Scholastic Aptitude Test scores, high school rank, sex, or college grade point average. This hypothesis was supported by the data. Although the verbal portion of the Scholastic Aptitude Test, the mathematics portion of the Scholastic Aptitude Test, and the combined scores of the Scholastic Aptitude Test provided a significant correlation with college grade point average, the addition of the variables of high school rank and sex did not significantly increase the amount of variance that was predicted with regard to college grade point average. In terms of the addition of high school rank with Scholastic Aptitude Test scores to predict college grade point average, the reason for the lack of a significant relationship can again be explained by the structure of the study. In using, as a sample, only students who had graduated in the top five percent of their high school class, the high school ranks became very homogeneous, thus not allowing a significant correlation with college grade point average (Kerlinger, 1986, p. 120). However, the structure of the study did not create as

homogeneous a sample in regard to Scholastic Aptitude Test scores. With the addition of sex as a predictor variable, the results of this study again supported the literature (Benbow and Stanley, 1982; Whitehead, 1984) in that no significant correlation existed between sex, either by itself or in combination with other variables, and college grade point average.

Based on the findings of the present study, several possibilities for further research can be suggested. First, a replication of the study should be completed which provides a means for controlling the homogeneity of the sample with regard to Scholastic Aptitude Test scores. The use of subjects who, for example, all received a combined score of 1300 or higher on the SAT, could result in data which differs markedly from that of the current study. As evidenced by this study, a homogeneous sampling of high school ranks did not correlate significantly with college grade point averages. Similarly, a future study could demonstrate an insignificant correlation between a homogeneous sampling of Scholastic Aptitude Test scores and college grade point average.

A second area for future investigation is the need to replicate the study with different (and more valid and reliable) measures of academic motivation, self-concept, and anxiety. The discrepancy in results between the motivation for grades scale of the Student Questionnaire and the

achiever personality scale of the Opinion, Attitude, and Interest Survey creates a need to re-examine the variable of academic motivation with yet another measure of that construct. The use of an additional motivation for grades measure may clarify the discrepancies in results which occurred in this study. Similarly, specific measures of self-concept and anxiety, as opposed to the general measure of emotional adjustment on the OAIS, could provide a more accurate assessment of the personality variables of self-concept and anxiety.

Related to the replication of the study with more reliable and valid assessment measures would be the suggestion to administer both a formative and summative measure of emotional adjustment to a sample of students in their freshman year of college. Most of the literature reviewed in this study concerning emotional adjustment to college was based on samplings of college freshmen (Cuyjet and Rode, 1987; Schrager, 1986; Teyber, 1983). Consequently, one would want to examine college emotional adjustment several times during a student's freshman year in order to determine when that personality variable is most prominent in an individual.

Finally, in considering the prediction of college academic success, additional personality variables need to be considered. It may be that other affective variables such as locus of control (Fenn and Iwanicki, 1986),

sociability (Schnager, 1986; Lee, 1984; Ray, 1983), independence (Nowack and Hanson, 1985), or responsibility (Teyber, 1983; Kohn and Frazer, 1986) have a greater relationship to college grade point average than the variables considered in this study. Further, one may want to consider additional cognitive variables (i.e. - intelligence, perception, memory) combined with different affective variables as a means of explaining different levels of academic achievement. Upon examination of the results of this study, it may be possible that cognitive factors do play a more important role than affective variables in determining college academic success. Similarly, the interaction of other cognitive and affective variables not examined in this study might demonstrate to be the best means of predicting college grade point averages among highly successful high school students.

CONCLUSIONS

Results of this study did not provide strong evidence to indicate that personality variables are better predictors of college grade point average than cognitive measures among highly successful high school students. Although a correlation between Scholastic Aptitude Test scores and college grade point average was found for students who had graduated in the top five percent of their high school class, no relationship was demonstrated for this sample between high school rank and college grade point average, nor between sex of subject and college grade point average. Similarly, the combination of the three aforementioned variables proved not to be significant predictors.

Affectively, a correlation between academic motivation and college grade point average among highly successful high school students was demonstrated on one measure used in this study. Results of a similar measure did not provide a significant relationship to exist between motivation for grades and college grade point average among students in the sample. Neither self-concept nor anxiety, as measured through emotional adjustment, correlated with college grade point average among students who had graduated in the top five percent of their high school class. Finally, the

combination of academic motivation and emotional adjustment did not prove significant when considering highly successful high school students.

Although the grade point averages of senior university students who had graduated in the top five percent of their high school class did demonstrate noticeable variability, the constructs examined in this study did not appreciably account for this variance. Therefore, future research needs to focus on other cognitive and affective variables which may correlate with college grade point average.

REFERENCES

- Baird, L.L. (1984). Relationships between ability, college attendance, and family income. Research in Higher Education, 21(4), 373-395.
- Balkin, J. (1987). Psychological correlates of success in college. Educational and Psychological Measurement, 47(3), 795-798.
- Barnes, V., Potter, E.H., and Fiedler, F.E. (1983). Effect of interpersonal stress on the prediction of academic performance. Journal of Applied Psychology, 68(4), 686-697.
- Barney, J.A., Fredericks, J.P., Fredericks, M., and Robinson, P. (1986). Analysis of academic achievement and personality characteristics of business students: A comparison. College Student Journal, 20(2), 202-207.
- Baumeister, R.F., and Tice, D.M. (1985). Self-esteem and responses to success and failure: Subsequent performance and intrinsic motivation. Journal of Personality, 53(3), 450-467.
- Belz, H.F., and Geary, D.C. (1984). Father's occupation and social background: Relation to SAT scores. American Educational Research Journal, 21(2), 473-478.
- Benbow, C.P., and Stanley, J.C. (1982). Consequences in high school and college of sex differences in mathematical reasoning ability: A longitudinal perspective. American Educational Research Journal, 19(4), 598-622.
- Cantor, N., Norem, J.K., Niedenthal, P.M., Langston, C.A. and Brower, A.M. (1987). Life tasks, self-concept ideals, and cognitive strategies in a life transition. Journal of Personality and Social Psychology, 51(6), 1178-1191.
- Crouse, J. (1986). Should a million and a half students be required to take the SAT next year? Phi Delta Kappan, 67(5), 346-352.
- Cuyjet, M.J., and Rode, D.L. (1987). Follow-up of orientation contacts: Effects on freshman environmental satisfaction. Journal of College Student Personnel, 18(1), 21-28.

- DeBoer, G.E. (1985). Success and failure in the first year of college: Effects on expectations, affect, and persistence. Journal of College Student Personnel, 26(3), 234-239.
- DeMeuse, K.P. (1985). The relationship between life events and indices of classroom performance. Teaching of Psychology, 12(3), 146-149.
- Dreher, M.J., and Singer, H. (1985). Predicting college success: Learning from text, background knowledge, attitude toward school, and the SAT as predictors. National Reading Conference Yearbook, 34, 362-368.
- Eison, J.A. (1982). Educational and personal dimensions of learning- and grade-oriented students. Psychological Reports, 51(3, pt. 1), 867-870.
- Eison, J.A., Pollio, H.R., and Milton, O. (1986). Educational and personal characteristics of four different types of learning- and grade-oriented students. Contemporary Educational Psychology, 11(1), 54-67.
- Fenn, L.M., and Iwanicki, E.F. (1986). An investigation of the relationship between student affective characteristics and student achievement within more or less effective school settings. Journal of Research and Development in Education, 19(4), 10-18.
- Fiske, E.B. (1989, January 3). More sophisticated skills stressed in changed college entrance test. The New York Times, pp. A1, A16.
- Fiske, E.B. (1989, January 15). College testing is a hard habit to break. The New York Times, p. E28.
- Gadzella, B.M., and Williamson, J.D. (1984). Study skills, self-concept and academic achievement. Psychological Reports, 54(3), 923-929.
- Griffin, J.M. (1980). Underachieving students in community colleges: Common personality and biographical characteristics. Community College Review, 8(1), 15-19.
- Griffore, R.J., and Griffore, G.D. (1982). Some correlates of high and low first term achievement in college. College Student Journal, 16(3), 249-253.

- Hays, C.L. (1988, November 6). Survival courses for freshmen. The New York Times-Education Life, pp. 48-50, 52.
- Houston, L.N. (1983). The comparative predictive validities of high school rank, the Ammons Quick Test, and two Scholastic Aptitude Test measures for a sample of Black female college students. Educational and Psychological Measurement, 41(4), 1123-1126.
- Houston, L.N. (1987). The predictive validity of a study habits inventory for first semester undergraduates. Educational and Psychological Measurement, 47(4), 1025-1030.
- Kerlinger, F.N. (1986). Foundations of behavioral research (3rd.). New York: Holt, Rinehart and Winston, Inc.
- Krockover, G.H., Mortlock, H., and Johnson, B.T. (1987). Comparing success predictors and common core course performance. Action in Teacher Education, 2(1), 61-65.
- Krockover, G.H., Mortlock, H.J., and Johnson, B.T. (1987). The relationship of success predictors to common core course performance for elementary education majors. Teacher Educator, 23(2), 13-20.
- Kohn, J.P., and Frazer, G.H. (1986). An academic stress scale: Identification and rated importance of academic stressors. Psychological Reports, 59(2, pt. 1), 415-426.
- Lee, C.C. (1984). An investigation of psychosocial variables related to academic success for rural Black adolescents. Journal of Negro Education, 53(4), 424-434.
- Mizuta, K. (1985). Studies on achievement motivation: I. About relation between achievement motivation and self consciousness. Tohoku Psychologica Folia, 44(1-4), 81-91.
- Niebuhr, R.E., and Norris, D.R. (1982). The influence of individual characteristics on performance under varying conditions. Journal of Social Psychology, 117(2), 249-255.
- Nowack, K.M., and Hanson, A.L. (1985). Academic achievement of freshmen as a function of residence hall housing. NASPA Journal, 22(3), 22-28.

- Pascarella, E.T. (1985). The influence of on-campus living versus commuting to college on intellectual and interpersonal self-concept. Journal of College Student Personnel, 26(4), 292-299.
- Pascarella, E.T. (1985). Students' affective development within the college environment. Journal of Higher Education, 56(6), 640-663.
- Plante, T.G. (1982). A self-concept (AVA) profile for high achieving college students. Psychological Reports, 51(3, pt. 2), 1118.
- Prola, M., and Stern, D. (1984). Optimism about college life and academic performance in college. Psychological Reports, 55(2), 347-350.
- Ray, A. (1983). Academic achievement and adjustment. Psychological Research Journal, 7(2), 69-74.
- Robinson, D.A.G., and Cooper, S.E. (1984). The influence of self-concept on academic success in technological careers. Journal of College Student Personnel, 25(2), 145-149.
- Schrager, R.H. (1986). The impact of living group social climate on student academic performance. Research in Higher Education, 25(3), 265-276.
- Schuman, H., Walsh, E., Olson, C., and Etheridge, B. (1985). Effort and reward: The assumption that college grades are affected by quantity of study. Social Forces, 63(4), 945-966.
- Spaights, E., Kenner, D., and Dixon, H. (1986). The relationship of self-concept and the academic success of black students in white institutions of higher education. Journal of Instructional Psychology, 13(3), 111-121.
- Srivastava, R.K., and Saxena, V. (1979). Personality correlates of self-rated academic success and failure: A comparative study. Journal of Psychological Researches, 23(1), 39-42.
- Teyber, E. (1983). Effects of the parental coalition on adolescent emancipation from the family. Journal of Marital and Family Therapy, 9(3), 305-310.

- Tracey, T.J., and Sedlacek, W.E. (1985). The relationship of noncognitive variables to academic success: A longitudinal comparison by race. Journal of College Student Personnel, 26(5), 405-410.
- Traub, G.S. (1983). Correlations of shyness with depression, anxiety, and academic performance. Psychological Reports, 52(3), 849-850.
- Weitzman, R.A. (1982). The prediction of college achievement by the Scholastic Aptitude Test and the high school record. Journal of Educational Measurement, 19(3), 179-191.
- White, W.F., Nylin, W.C., and Esser, P.R. (1985). Academic course grades as better predictors of graduation from a commuter-type college than SAT scores. Psychological Reports, 56(2), 375-378.
- Whitehead, J. (1984). Motives for higher education: A study of intrinsic and extrinsic motivation in relation to academic attainment. Cambridge Journal of Education, 14(2), 26-34.